```
               Hydrophobic                                    Hydrophilic
                 -2            -1             0            1            2
             -----|----------|----------|----------|----------|-----
     1   -1.08              ============ M
     2   -1.28             ============== S
     3   -1.74          ================ L
     4   -1.85         ================== F
     5   -2.11        ==================== g
     6   -1.61           ================ L
     7   -1.50           ============== L
     8   -1.50           ============== L
     9   -1.28            ============ L
    10   -0.98              ========== t
    11   -0.38                  ==== S
    12    0.07                       A =
    13    0.18                       L ==
    14    0.48                       A =====
    15    0.50                       G =====
    16    0.53                       Q =====
    17    0.42                       R ====
    18    0.42                       Q ====
    19    0.43                       G ====
    20    0.47                       T =====
    21    0.23                       Q ==
    22    0.25                       A ===
    23    0.38                       E ====
    24    0.38                       S ====
    25   -0.08                     = N
    26   -0.08                     = L
    27   -0.20                    == S
    28   -0.20                    == S
    29   -0.20                    == K
    30   -0.67                ====== F
    31    0.25                       Q ===
    32    0.72                       F ======
    33    1.17                       S ============
    34    1.15                       S ============
    35    1.10                       N ==========
    36    0.82                       K =======
    37    0.35                       E ====
    38    0.35                       Q ====
    39    0.32                       N ===
    40    0.32                       G ===
    41    0.63                       V =====
    42    1.38                       Q ==============
    43    1.85                       D ==================
    44    1.05                       P ==========
    45    0.75                       Q =======
    46    0.15                       h ==
    47   -0.42                   ==== E
    48   -0.87                ======== R
    49   -1.43            ============== I
```

Fig. 1A

```
 50   -1.10        =========== I
 51   -0.80          ======== t
 52   -0.18               == V
 53   -0.23               == S
 54   -0.37             ==== T
 55   -0.25              === N
 56   -0.28              === G
 57    0.22                  S ==
 58   -0.25              === I
 59    0.05                  H
 60    0.05                  S
 61   -0.07                = P
 62   -0.05                  R
 63   -0.55            ====== F
 64    0.37                  P ====
 65    0.40                  H ====
 66    0.42                  T ====
 67    0.23                  y ==
 68   -0.08                = P
 69   -0.33              === R
 70   -1.40    =============== N
 71   -0.93         ======== T
 72   -1.17      =========== V
 73   -1.17      =========== L
 74   -0.95        ========= V
 75   -0.95        ========= W
 76    0.12                  R =
 77    0.12                  L =
 78    0.45                  V =====
 79    0.45                  A ====
 80   -0.03                  V
 81   -0.08                = E
 82   -0.55            ====== E
 83   -1.35     ============== N
 84   -1.45     ============== V
 85   -1.62    =============== W
 86   -0.55            ====== I
 87    0.25                  Q ===
 88    0.72                  L =======
 89    0.60                  T ======
 90    0.67                  F =======
 91    0.78                  D ========
 92    0.78                  E =======
 93    0.78                  R =======
 94    0.28                  F ===
 95    1.20                  G ============
 96    1.70                  L ================
 97    2.50                  E ========================
 98    1.70                  D ================
 99    1.03                  P =========
100    1.53                  E ==============
101    0.65                  D ======
102    0.65                  D ======
```

Fig. 1B

```
103   -0.27              === I
104   -0.22               == C
105    0.45                  K =====
106   -0.30              === Y
107    0.58                  D ======
108    0.58                  F ======
109    1.00                  V =========
110    1.30                  E ============
111    1.30                  V ============
112    1.55                  E ===============
113    0.98                  E =========
114    0.18                  P ==
115   -0.12                = S
116   -0.17               == D
117   -0.17               == G
118   -0.73          ======= T
119   -0.83         ======= I
120   -0.53           ===== L
121   -0.80         ======= G
122   -0.80         ======= R
123   -1.37   =============== W
124   -1.05      ========== C
125   -0.88       ======== G
126   -0.88       ======== S
127    0.18                  G ==
128    0.22                  T ==
129   -0.02                  V
130    0.28                  P ===
131    0.78                  G =======
132    0.78                  K =======
133    0.32                  Q ===
134    0.32                  I ===
135    0.32                  S ===
136    0.77                  K =======
137   -0.03                  G
138    0.47                  N =====
139    0.02                  Q
140   -0.27              === I
141    0.08                  R =
142    0.08                  I =
143    0.88                  R ========
144    0.00                  F
145    0.00                  V
146    0.25                  S ===
147    0.25                  D ===
148    0.25                  E ===
149   -0.25              === Y
150    0.13                  F =
151    0.13                  P =
152   -0.03                  S
153   -0.38             ==== E
154   -0.97       ========= P
155   -1.35   =============== G
156   -1.32    ============= F
```

Fig. 1C

```
157   -1.20      =============  C
158   -1.28     ==============  I
159   -1.20      ============   H
160   -1.12       ==========    Y
161   -0.70         ======      N
162   -1.15       ==========    I
163   -0.92        ========     V
164   -0.17            ==       M
165   -0.03                     P
166   -0.28            ===      Q
167   -0.27            ===      F
168    0.15                     T  =
169    0.27                     E  ===
170   -0.48          =====      A
171   -0.70         ======      V
172   -0.45           ===       S
173   -0.50          ====       P
174   -0.45          ====       S
175   -0.58         =====       V
176   -0.63         ======      L
177   -0.33           ===       P
178   -0.63         =====       P
179   -0.13             =       S
180   -0.48          =====      A
181   -0.70         =======     L
182   -0.37           ====      P
183   -0.33            ===      L
184   -0.12             =       D
185   -0.92        ========     L
186   -1.18      ============   L
187   -0.97       =========     N
188   -1.42     ==============  N
189   -2.02   ==================== A
190   -2.00   ==================== I
191   -2.00   ===================== t
192   -0.93        ========     A
193   -0.35           ====      F
194   -0.23            ==       s
195    0.03                     T
196    0.60                     L  ======
197    0.52                     E  =====
198   -0.28            ===      D
199   -0.28            ===      L
200    0.02                     I
201    0.82                     R  =======
202    0.82                     Y  =======
203    1.03                     L  =========
204    1.37                     E  ==============
205    0.57                     P  =====
206    1.07                     E  ==========
207    0.27                     R  ===
208    0.27                     w  ===
209    0.93                     Q  =========
210    0.60                     L  ======
```

Fig. 1D

```
211   0.52                                              D =====
212   0.52                                              L =====
213   0.82                                              E ========
214   0.25                                              D ===
215  -0.42                                      ==== L
216  -0.08                                          = Y
217   0.00                                              R
218  -0.80                               ======== P
219  -0.80                               ======= T
220  -0.23                                         == w
221  -0.15                                          = Q
222  -0.60                                    ====== L
223  -0.55                                    ====== L
224  -0.67                                   ======= G
225  -0.67                                   ======= K
226  -0.67                                   ======= A
227  -0.08                                          = F
228   0.38                                              V ====
229   1.13                                              F ===========
230   1.30                                              G =============
231   1.05                                              R ==========
232   1.05                                              K ==========
233   0.25                                              S ===
234   0.23                                              R ==
235  -0.57                                    ====== V
236  -0.62                                    ====== V
237  -0.43                                      ==== D
238  -0.43                                      ==== L
239   0.37                                              N ====
240   0.08                                              L =
241   0.88                                              L =========
242   0.88                                              T ========
243   0.57                                              E ======
244   0.12                                              E =
245  -0.55                                    ====== V
246  -0.37                                       ==== R
247  -0.87                              ======== L
248  -0.07                                          = Y
249   0.35                                              S ====
250  -0.12                                          = C
251   0.10                                              T =
252  -0.08                                          = P
253  -0.03                                              R
254  -0.83                               ======= N
255  -0.37                                       ==== F
256   0.55                                              S ======
257   1.00                                              V ==========
258   0.95                                              S =========
259   1.40                                              I ==============
260   2.20                                              R ======================
261   1.63                                              E ================
262   1.63                                              E ================
263   1.07                                              L ==========
264   1.07                                              K ==========
```

Fig. 1E

```
265    0.15                                                   R  =
266   -0.92                                      ========== T
267   -0.85                                      ========= D
268   -1.35                                  ============== T
269   -1.45                                ================ I
270   -1.45                                  ============== F
271   -1.33                                  ============== W
272   -1.02                                    ========== P
273   -0.52                                        ===== G
274   -0.02                                              C
275   -0.02                                              L
276    0.28                                              L  ===
277    0.58                                              V  ======
278    0.87                                              K  =========
279    0.20                                              R  ==
280   -0.38                                    ==== C
281   -0.38                                    ==== G
282   -0.55                                  ===== G
283   -0.85                              ========= N
284   -0.97                              ========== C
285   -0.77                                ======= A
286   -0.85                              ========= C
287   -0.65                                ======= C
288    0.02                                              L
289    0.15                                              H  ==
290    0.27                                              N  ===
291    0.07                                              C  =
292   -0.02                                              N
293   -0.05                                              E
294   -0.50                                    ====== C
295    0.17                                              Q  ==
296   -0.12                                          = C
297   -0.02                                              V
298    0.73                                              P  =======
299    1.23                                              S  =============
300    1.20                                              K  ============
301    0.62                                              V  ======
302    1.37                                              T  ===============
303    1.18                                              K  ============
304    0.38                                              K  ====
305   -0.08                                          = Y
306   -0.40                                      ==== H
307    0.18                                              E  ==
308   -0.32                                        === V
309    0.43                                              L  ====
310    0.67                                              Q  ======
311    0.63                                              L  ======
312    0.68                                              R  ======
313    0.68                                              P  ======
314    0.68                                              K  ======
315   -0.12                                          = T
316   -0.13                                          = G
317    0.37                                              V  ====
318    0.67                                              R  ======
```
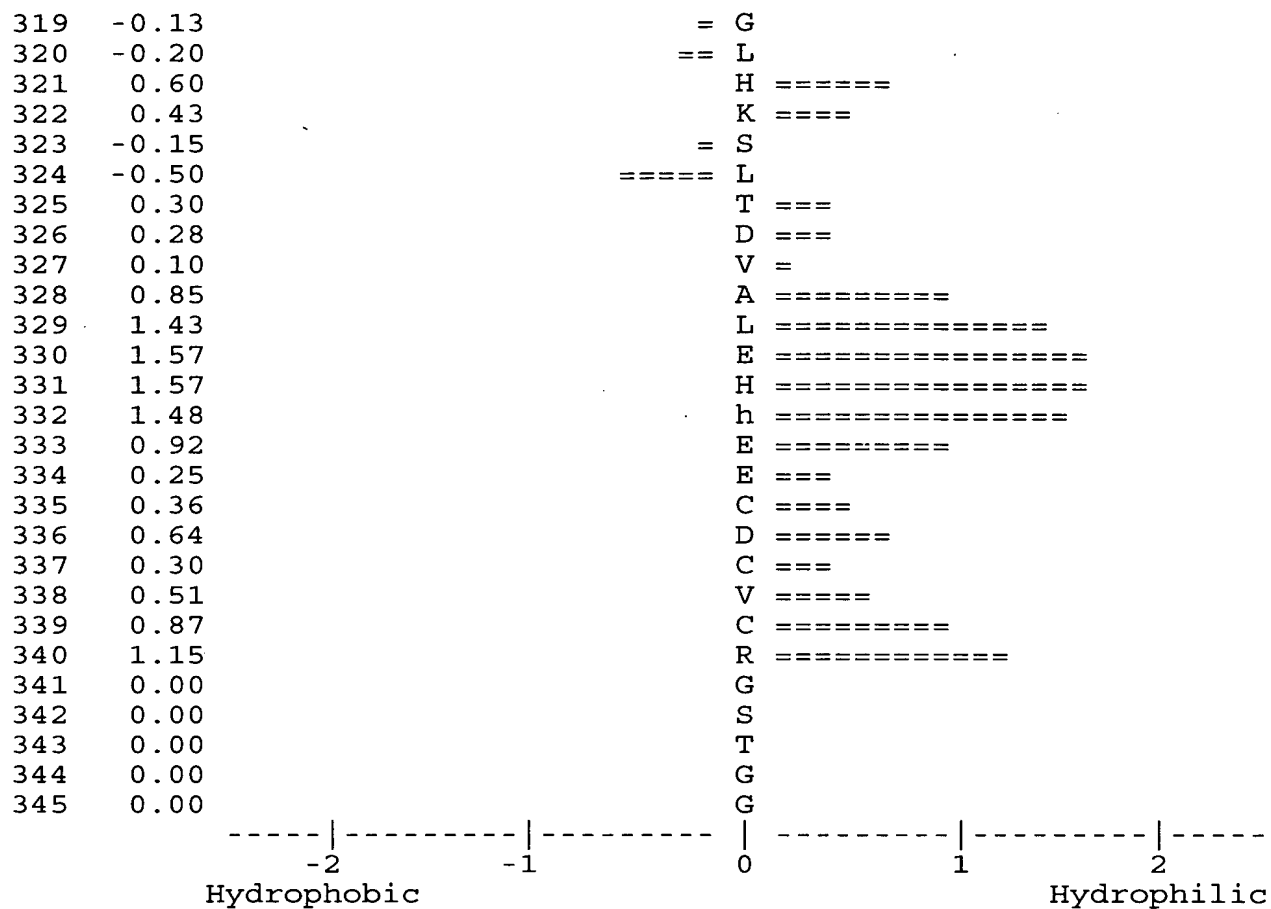
Fig. 1F

```
319   -0.13                                 = G
320   -0.20                                == L
321    0.60                                   H ======
322    0.43                                   K ====
323   -0.15                                 = S
324   -0.50                             ===== L
325    0.30                                   T ===
326    0.28                                   D ===
327    0.10                                   V =
328    0.85                                   A =========
329    1.43                                   L ==============
330    1.57                                   E ===============
331    1.57                                   H ===============
332    1.48                                   h ==============
333    0.92                                   E =========
334    0.25                                   E ===
335    0.36                                   C ====
336    0.64                                   D ======
337    0.30                                   C ===
338    0.51                                   V =====
339    0.87                                   C ========
340    1.15                                   R ===========
341    0.00                                   G
342    0.00                                   S
343    0.00                                   T
344    0.00                                   G
345    0.00                                   G
           ----- | --------- | --------- | --------- | --------- | -----
                -2          -1           0           1           2
           Hydrophobic                                      Hydrophilic
```

Fig. 1G

MSLFGLLLLTSALAGQRQGTQAESNLSSKFQFSSNKEQNGVQDPQHERIITVSTNGSIHS

MLLLGLLLLTSALAGQRTGTRAESNLSSKLQLSSDKEQNGVQDPRHERVVTISGNGSIHS
      10   20   30   40   50   60

PRFPHTYPRNTVLVWRLVAVEENVWIQLTFDERFGLEDPEDDICKYDFVEVEEPSDGTIL

PKFPHTYPRNMVLVWRLVAVDENVRIQLTFDERFGLEDPEDDICKYDFVEVEEPSDGSVL
      70   80   90   100   110   120

GRWCGSGTVPGKQISKGNQIRIRFVSDEYFPSEPGFCIHYNIVMPQFTEAVSPSVLPPSA

GRWCGSGTVPGKQTSKGNHIRIRFVSDEYFPSEPGFCIHYSIIMPQVTETTSPSVLPPSS
     130   140   150   160   170   180

LPLDLLNNAITAFSTLEDLIRYLEPERWQLDLEDLYRPTWQLLGKAFVFGRKSRVVDLNL

LSLDLLNNAVTAFSTLEELIRYLEPDRWQVDLDSLYKPTWQLLGKAFLYGKKSKVVNLNL
     190   200   210   220   230   240

LTEEVRLYSCTPRNFSVSIREELKRTDTIFWPGCLLVKRCGGNCACCLHNCNECQCVPSK

LKEEVKLYSCTPRNFSVSIREELKRTDTIFWPGCLLVKRCGGNCACCLHNCNECQCVPRK
     250   260   270   280   290   300

VTKKYHEVLQLRPKTGVRGLHKSLTDVALEHHEECDCVCRGSTGG (SEQ ID NO:2)

VTKKYHEVLQLRPKTGVKGLHKSLTDVALEHHEECDCVCRGNAGG (SEQ ID NO:4)
     310   320   330   340

Fig. 2